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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 558,284	04 25 2000	Uwe Sonnewald	VOS-12 CON	8936

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EXAMINER

COLLINS, CYNTHIA E

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 03/25/2002

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/558,284

Applicant(s)

SONNEWALD ET AL.

Examiner

Cynthia Collins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2000 and 09 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-5 and 8-20, in Paper No. 15, is acknowledged. The traversal is on the ground(s) that searching Groups I and II would not be unduly burdensome because their searches are coextensive. This is not found persuasive because while the search of Group II may overlap with the search of Group I, their searches are not coextensive. In this particular instance, a search of Group II is not coextensive with a search of Group I, since Group II requires a search for additional recombinant DNA molecules not claimed in Group I, such as DNA molecules encoding a peptide, protein, antisense RNA, sense RNA viral RNA or ribozyme not claimed in Group I.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

An initialed and dated copy of Applicant's IDS form 1449, Paper No. 13, is attached to the instant Office action.

Claim Objections

Claim 1 is objected to because of the following informalities: the indefinite article "a" is omitted before "recombinant DNA molecule". Appropriate correction is required.

Claim 5 is objected to because of the following informalities: the indefinite article "a" is omitted before "vector". Appropriate correction is required.

Claim 8 is objected to because of the following informalities: the indefinite article "a" is omitted before "host cell". Appropriate correction is required.

Claim 9 is objected to because of the following informalities: the indefinite article "a" is omitted before "kit". Appropriate correction is required.

Claim 10 is objected to because of the following informalities: the indefinite article "a" is omitted before "process". Appropriate correction is required.

Claim 13 is objected to because of the following informalities: the indefinite article "a" is omitted before "transgenic". Appropriate correction is required.

Claim 14 is objected to because of the following informalities: the definite article "the" is omitted before "plant cell". Appropriate correction is required.

Claim 16 is objected to because of the following informalities: the indefinite article "a" is omitted before "transgenic plant". Appropriate correction is required.

Claims 8-20 are objected to because of the following informalities: the claims depend on claims of nonelected inventions. Appropriate correction is required.

Claims 4-5, 8-13 and 15-20 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claim in the alternative only and/or cannot depend from any other multiple dependent claim. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 112 and § 101

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 8-9 and 13-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences, and to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences said recombinant DNA molecule consisting of (a) sequences comprising a nucleotide sequence that encodes SEQ ID NO:2, (b) sequences comprising SEQ ID NO:1, (c) sequences comprising a nucleotide sequence which hybridizes to (a) or (b), (d) sequences degenerate to (c), and (e) sequences being a derivative, analogue or fragment of (a), (b), (c) or (d) encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. The claims are also drawn to a vector, a host cell, a kit, transgenic plants, plant cells, tissue, harvest products and propagation material comprising said recombinant DNA molecule.

The instant application describes only a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences, said recombinant DNA molecule consisting of the nucleotide sequence of SEQ ID NO:1 encoding the amino acid sequence of SEQ ID NO:2, and a vector, a host cell, and transgenic plants and plant cells comprising said recombinant DNA molecule (Examples 1-12 pages 19-24, and Sequence Listing). The instant application does not describe sequences comprising a nucleotide sequence which hybridizes to (a) or (b), or sequences being a derivative, analogue or fragment of (a), (b), (c) or (d) encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. The instant application also does not describe which regions of

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the nucleotide or amino acid sequence are essential to 2-deoxyglucose-6-phosphate phosphatase activity. Additionally, the instant application does not describe other nucleotide sequences encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity.

Therefore, given the lack of written description in the specification with regard to the structural and physical features of sequences hybridizing to a DNA sequence of SEQ ID NO:1 or a DNA sequence encoding SEQ ID NO:2, sequences being a derivative, analogue or fragment of sequences encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity, and DNA sequences encoding proteins possessing 2-deoxyglucose-6-phosphate phosphatase activity, one skilled in the art would not recognize from the disclosure that Applicant was in possession of the claimed invention at the time this application was filed (see Written Description Guidelines, Federal Register, Vol. 66, No. 4, January 5, 2001, pages 1099-1111).

Claims 1-5 and 8-20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a recombinant DNA molecule comprising a DNA sequence of SEQ ID NO:1 encoding 2-deoxyglucose-6-phosphate phosphatase of SEQ ID NO:2 operably linked to plant regulatory sequences, for a vector, a host cell, a kit, transgenic plants, plant cells, tissue, harvest products and propagation material comprising said recombinant DNA molecule, and for a process for selecting transformed plant cells comprising transforming plants cells with said recombinant DNA molecule and selecting transformed cells on 2-deoxyglucose containing media, use of said recombinant DNA molecule to produce transgenic plant plants, cells and or tissue, and use of said recombinant DNA molecule as a selectable marker in plant cell and tissue culture, does not reasonably provide enablement for other recombinant DNA molecules comprising other DNA sequences, or for products comprising said other recombinant

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DNA molecules, or for processes using said other recombinant DNA molecules. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are drawn to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences, and to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences consisting of (a) sequences comprising a nucleotide sequence that encodes SEQ ID NO:2, (b) sequences comprising SEQ ID NO:1, (c) sequences comprising a nucleotide sequence which hybridizes to (a) or (b), (d) sequences degenerate to (c), and (e) sequences being a derivative, analogue or fragment of (a), (b), (c) or (d) encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. The claims are also drawn to a vector, a host cell, a kit, transgenic plants, plant cells, tissue, harvest products and propagation material comprising said recombinant DNA molecule. Additionally, the claims are drawn to a process for selecting transformed plant cells comprising transforming plants cells with said recombinant DNA molecule and selecting transformed cells on 2-deoxyglucose containing media, use of said recombinant DNA molecule to produce transgenic plant plants, cells and or tissue, and use of said recombinant DNA molecule as a selectable marker in plant cell and tissue culture and/or plant breeding.

The instant specification discloses a recombinant DNA molecule comprising a DNA sequence of SEQ ID NO:1 encoding 2-deoxyglucose-6-phosphate phosphatase of SEQ ID NO:2 operably linked to plant regulatory sequences, a vector, a host cell, transgenic tobacco, potato,

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and pea plants and plant cells comprising said recombinant DNA molecule, and a process for selecting transformed plant cells comprising transforming plants cells with said recombinant DNA molecule and selecting transformed cells on 2-deoxyglucose containing media (Examples 1-12 pages 19-24, and Sequence Listing).

The specification does not disclose how to make and use sequences comprising a nucleotide sequence which hybridizes to (a) or (b), or sequences being a derivative, analogue or fragment of (a), (b), (c) or (d) encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. The instant application also does not disclose how to make and use other nucleotide sequences encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. While one of skill in the art could readily identify DNA sequences which hybridize to SEQ ID NO:1 or a nucleic acid encoding SEQ ID NO:2, it would require undue experimentation for one of skill in the art to determine which of those sequences encode a protein having a 2-deoxyglucose-6-phosphate phosphatase activity. It would also require undue experimentation for one of skill in the art to determine the structure of other sequences encoding a protein having a 2-deoxyglucose-6-phosphate phosphatase activity, as the specification provides no guidance as to which nucleotide or amino acid sequence regions are essential to 2-deoxyglucose-6-phosphate phosphatase activity.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 and 8-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1 is indefinite in the recitation of "may". It is suggested that the claim be amended to delete the word "may".

Claim 1 is indefinite in the recitation of "regulatory sequences of a promoter". It is unclear whether regulatory sequences of a promoter includes a promoter.

Claim 2 is indefinite in the recitation of "hybridizes to". It is unclear under what hybridization conditions would yield the DNA sequences. It is suggested that the claim be amended to recite specific hybridization conditions.

Claim 3 is indefinite in the recitation of "derived". It is unclear how much of the DNA sequence is derived from yeast. It is suggested that the claim be amended to recite "obtained".

Claim 5 is indefinite in the recitation of the indefinite article "a" before "recombinant DNA molecule". It is suggested that the claim be amended to recite "the recombinant DNA molecule".

Claim 8 is indefinite in the recitation of the transitional phrase "containing". The scope of the claim is unclear. It is suggested that the claim be amended to recite a transitional phrase such as "comprising", "consisting of", or "consisting essentially of".

Claim 8 is indefinite in the recitation of the indefinite article "a" before "recombinant DNA molecule". It is suggested that the claim be amended to recite "the recombinant DNA molecule".

Claim 9 is indefinite in the recitation of the indefinite article "a" before "recombinant DNA molecule" and before "vector". It is suggested that the claim be amended to recite "the recombinant DNA molecule", and "the vector".

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Claim 9 is indefinite in the recitation of "functionally equivalent to". It is unclear in what way the chemical compound is functionally equivalent to 2-deoxyglucose. It is suggested that the claim be amended to recite a specific 2-deoxyglucose function.

Claim 10 is indefinite in the recitation of the indefinite article "a" before "recombinant DNA molecule". It is suggested that the claim be amended to recite "the recombinant DNA molecule".

Claim 10 is indefinite in the recitation of "functionally equivalent to". It is unclear in what way the chemical compound is functionally equivalent to 2-deoxyglucose. It is suggested that the claim be amended to recite a specific 2-deoxyglucose function.

Claim 13 is indefinite in the recitation of the transitional phrase "containing". The scope of the claim is unclear. It is suggested that the claim be amended to recite a transitional phrase such as "comprising", "consisting of", or "consisting essentially of".

Claim 13 is indefinite in the recitation of the indefinite article "a" before "recombinant DNA molecule" and before "vector". It is suggested that the claim be amended to recite "the recombinant DNA molecule", and "the vector".

Claim 16 is indefinite in the recitation of the transitional phrase "containing". The scope of the claim is unclear. It is suggested that the claim be amended to recite a transitional phrase such as "comprising", "consisting of", or "consisting essentially of".

Claim 16 is indefinite in the recitation of the indefinite article "a" before "plant cell". It is suggested that the claim be amended to recite "the plant cell".

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Claims 19 and 20 are indefinite in the recitation of the indefinite article "a" before "DNA sequence", "recombinant DNA molecule" and "vector". It is suggested that the claims be amended to recite "the DNA sequence", "the recombinant DNA molecule", and "the vector".

Claims 19 and 20 provide for the use of a DNA sequence, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 19 and 20 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Randez-Gil et al. (1995, *Yeast*, Vol. 11, pages 1233-1240, Applicant's IDS) in view of Herrera-Estrella et al. (1983, *The EMBO Journal*, Vol. 2, pages 987-995, Applicant's IDS), and in further view of Zemek et al. I (1975, *Z. Pflanzenphysiol. Bd.*, Vol. 76, pages 114-119, Applicant's IDS) and Zemek et al. II (1976, *Z. Pflanzenphysiol. Bd.*, Vol. 77, pages 95-98, Applicant's IDS).

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The claims are drawn to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences, and to a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences said recombinant DNA molecule consisting of (a) sequences comprising a nucleotide sequence that encodes SEQ ID NO:2, (b) sequences comprising SEQ ID NO:1, (c) sequences comprising a nucleotide sequence which hybridizes to (a) or (b), (d) sequences degenerate to (c), and (e) sequences being a derivative, analogue or fragment of (a), (b), (c) or (d) encoding a protein possessing 2-deoxyglucose-6-phosphate phosphatase activity. The claims are also drawn to a host cell, a kit, transgenic plants, plant cells, tissue, harvest products and propagation material, a process for selecting transformed plant cells comprising transforming plants cells with said recombinant DNA molecule and selecting transformed cells on 2-deoxyglucose containing media, use of said recombinant DNA molecule to produce transgenic plant plants, cells and or tissue, and use of said recombinant DNA molecule as a selectable marker in plant cell and tissue culture and/or plant breeding.

Randez-Gil et al. teach a recombinant DNA molecule comprising a DNA sequence of SEQ ID NO:1 encoding 2-deoxyglucose-6-phosphate phosphatase of SEQ ID NO:2 from yeast that functions to inactivate 2-deoxyglucose, operably linked to yeast regulatory sequences, a host cell, transgenic yeast cells, tissue, a process for selecting transformed yeast cells comprising transforming yeast cells with said recombinant DNA molecule and selecting transformed cells on 2-deoxyglucose containing media, use of said recombinant DNA molecule to produce transgenic

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yeast cells, and use of said recombinant DNA molecule as a selectable marker in yeast cell culture (page 1236 Table 1).

Randez-Gil et al. do not teach a recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase operably linked to plant regulatory sequences, or processes or products involving the transformation and selection of plant cells.

Herrera-Estrella et al. teach processes and products involving the transformation and selection of plant cells using recombinant DNA molecules encoding microbial enzymes that function to inactivate compounds that inhibit the growth of plant cells in cell culture (page 987 abstract).

Zemek et al. I teach that 2-deoxyglucose inhibits the growth of tobacco callus tissue culture (page 118 Figure 3). Zemek et al. II teach that 2-deoxyglucose inhibits the growth of spruce tissue culture (page 96 Figure 1).

Given that the prior art of Herrera-Estrella et al. teaches transformation and selection of plant cells using recombinant DNA molecules encoding microbial enzymes that function to inactivate compounds that inhibit the growth of plant cells in cell culture, and given that the prior art of Zemek et al. I and II teaches that 2-deoxyglucose inhibits the growth of plant cells in culture, it would have been *prima facie* obvious to one skilled in the art at the time the invention was made use the recombinant DNA molecule comprising a DNA sequence encoding 2-deoxyglucose-6-phosphate phosphatase from yeast that functions to inactivate 2-deoxyglucose as taught by Randez-Gil et al., to transform plant cells, for the purpose of selecting transformed cells on 2-deoxyglucose containing media and producing transformed plants, without any surprising or unexpected results. Accordingly, one skilled in the art would have been motivated

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to generate the claimed invention with a reasonable expectation of success. Thus, the claimed invention would have been *prima facie* obvious as a whole to one of ordinary skill in the art at the time the invention was made, especially in the absence of evidence to the contrary.

Remarks

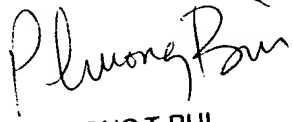
No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (703) 605-1210. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (703) 306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

CC
March 22, 2002


PHUONG T. BUI
PRIMARY EXAMINER